

CONCEPTUAL CLOSURE

THE IMPACT OF EVENT BOUNDARIES ON LONG-TERM MEMORY ENCODING AND ADVERTISING EFFECTIVENESS

Richard B. Silberstein • Geoffrey Nield • Peter Pynta • Shaun Seixas

INTRODUCTION

Television advertising frequently follows a common creative structure. Typically this involves a narrative or story telling component that portrays a situation or problem followed by the presentation of the brand at or near the end of the advertisement. While this is a very common ad structure, is it effective? Specifically, does having the branding information immediately following the end of the preceding narrative have an effect on the way that information about the brand is stored in long-term memory? This is an important question as failure to store branding information in long-term memory means that the ad cannot be effective in influencing future consumer behavior or attitude. In this presentation we discuss some recent findings that have important implications for how ads are structured.

How we perceive the world and how our experiences are stored or encoded in long-term memory is an area of increasing research interest. Our subjective experience as well as research indicates that time extended experiences are encoded in long-term memory and recalled as discrete 'events'. An event can be defined as 'a segment of time at a given location that is conceived by an observer to have a beginning and an end' (Zacks & Tversky 2001). The beginning and end of the time segment is termed the 'event boundary' and the event boundaries determine the segmentation of the event.

A number of behavioural and neuroimaging studies have identified changes in perception and memory encoding occurring at event boundaries. Early studies suggested that perceptions occurring at event boundaries are better remembered. These behavioural studies defined event boundaries over a relatively long 5 to 10 sec interval and were thus unable to identify what occurs precisely at the event boundary. In addition, behavioural studies cannot give an indication of which brain regions are involved in processing event boundaries.

More recently, fMRI based neuroimaging studies have shown that event boundaries are associated with transient decreases in attention and increases in other parts of the brain concerned with processing the information. We suggest that this particular pattern of activity is an indication of the brain processing the preceding perceptions as a discrete event and encoding this in long-term memory.

In our Steady State Topography (SST) studies of brain activity correlates of television advertising, we have observed transient (1 – 2 sec) drops in attention and long-term memory (LTM) encoding at what we judge to be event boundaries. We have termed this phenomenon 'Conceptual Closure' and suggest that it is a long-term memory analog of the well-known brief 'attentional blink' phenomenon (Shapiro et al 1997). SST is an evoked potential methodology that continuously measures changes in the speed of cortical neural processing in various parts of the brain. For more details, the reader is referred to Pynta et al (2014).

In a recent study, we examined SST brain activity correlates of long-term memory encoding as 50 participants viewed a first person journey through various rooms of a virtual art gallery (Silberstein et al, 2014). We assumed that passing through a doorway from one room to another will serve as an event boundary and we thus hypothesized that LTM encoding will exhibit a transient reduction as participants 'move' from one room of the gallery to another. The hypothesis was confirmed in that we observed a statistically robust transient reduction in SST indices of LTM encoding when participants passed through the doorway from one room of the gallery to another.

More generally, we have found that Conceptual Closure is triggered by an explicit or implied event boundary. In advertisements, explicit event boundaries could include the screen changing to a uniform colour or a piece of music coming to an end. More subtle or implied indications of an event boundary could include a view of a person walking through a doorway or a rear view of a car driving away. Basically, anything that suggests the end of an event or an event boundary appears to trigger Conceptual Closure.

In this presentation we illustrate the impact of Conceptual Closure on the effectiveness of television advertising and show how small executional changes can modify Conceptual Closure and thus enhance advertising effectiveness.

ADVERTISING EFFECTIVENESS, LONG-TERM MEMORY ENCODING AND CONCEPTUAL CLOSURE

Before discussing the relationship between Conceptual Closure and advertising effectiveness, it is important to briefly review the relationship between long-term memory encoding and advertising effectiveness. The notion that an advertisement can only have an effect on the future behavior of consumers if the information is encoded in long-term memory is so self-evident to almost be a tautology. In a study examining the relationship between LTM encoding of advertising and changes in consumer brand preference, Silberstein & Nield (2008), it was found that long-term memory encoding of brand information or key message was robustly correlated with a change in consumer brand preference towards the advertised brand.

Kennedy et al (2010) presented a pilot fMRI study examining the neural and behavioral correlates of advertising effectiveness. The authors determined the advertising effectiveness from the index of sales impact of the ad. This index is essentially the sales differentials from people exposed to the ad compared to sales among those not exposed with controls for confounding factors such as promotions. For the ads studies, hippocampus activity, an index of LTM encoding, was found to be the strongest correlate of effectiveness or sales impact. Interestingly, recognition, a behavioral measure was not correlated with sales or advertising effectiveness. A subsequent 2011 study conducted for Thinkbox (UK) by Neuro-Insight in collaboration with Ebiquity examined the SST correlates of advertising effectiveness with econometrically derived measures of advertising performance.¹⁾ The Thinkbox study confirmed the importance of LTM encoding at the time of branding as a key indicator of advertising effectiveness.

If the level of LTM encoding at the point of branding or key message is a critical indicator of advertising effectiveness, then anything that compromises the level of LTM at point of branding or key message will compromise advertising effectiveness. In this presentation we illustrate the impact of Conceptual Closure on the effectiveness of television advertising and show how small executional changes can modify Conceptual Closure and thus enhance advertising effectiveness.

SAVE RETIREMENT CAMPAIGN

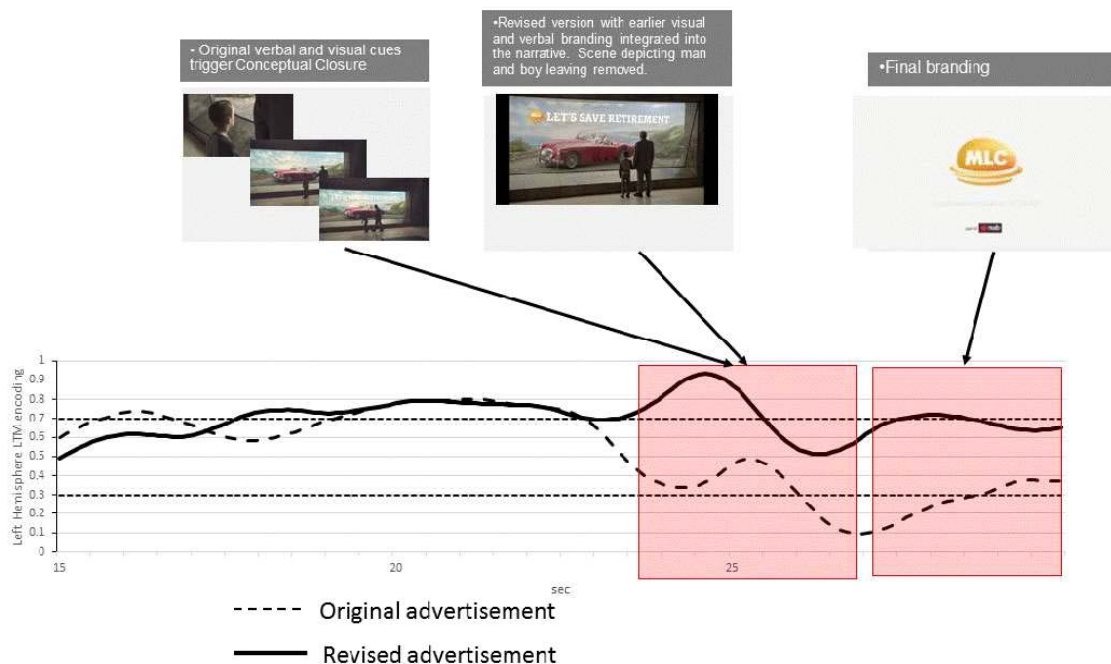
In 2014 Neuro-Insight conducted a two part advertising research study examining a campaign encouraging people to seek financial advice to protect their financial assets for retirement. The study was conducted for MLC, an Australian bank and investment house and Neuro-Insight gratefully acknowledges MLC's assistance and approval for this data to be presented. In the first part of the study, a television advertisement that had already gone to air was evaluated. Independent tracking identified the campaign as having strong overall recognition, but relatively weak brand linkage. Feedback on the performance of the advertisement, as evaluated with SST, was then provided to the client along with recommendations on how to address deficiencies revealed in the first study. These recommendations were implemented by the creative agency and the revised advertisement then went to air.

In all, the original advertisement was on air for three months and the revised advertisement for a following three months. An independent market research firm that routinely tracks a variety of long-term brand key performance indicators as well as advertising performance was commissioned by the client to track the performance of both the original and revised advertisement for a total of four months.

The study of the original and revised advertisement were both conducted in Melbourne at the Neuro-Insight offices. Fifty (50) people participated in both studies with the first study taking place in July 2014 and the subsequent study in September 2014. Both the original and the revised advertisements were 30sec in duration. Participants were recruited through a recruitment agency and had to satisfy a range of criteria such as age, employment status and financial decision making responsibility as specified by the client.

Both advertisements featured a young boy and his grandfather visiting a futuristic 'museum' where a display features a happy older couple going for a drive in the country in their sports car, and by inference enjoying their retirement. As they look at the display, the young boy asks 'what are they doing' and the grandfather wistfully replies 'they are in retirement' and in retirement 'they can do anything they want'. In the original advertisement, a voice-over then suggests people speak to their financial advisor and subsequently the boy and grandfather turn and leave the display.

FIGURE 1. LONG-TERM MEMORY ENCODING FOR ORIGINAL AND REVISED ADVERTISEMENT



Left hemisphere long-term memory encoding for the last 15 sec of the advertisement. The dashed line is the activity for the original advertisement while the solid line is the revised advertisement. In the original advertisement, the drops in long-term memory encoding at the 24 sec and 26 sec points coincide with the voiceover and pair walking away from the display. Note the improved long-term memory encoding in the revised advertisement at the 24 sec mark reflecting changes in the voice-over and earlier verbal and visual introduction of the brand. In addition, the scene showing the boy and grandfather walking away has also been removed from the revised advertisement. Final branding in the revised advertisement does not suffer from Conceptual Closure triggered by the boy and grandfather walking away.

Our analysis of the original advertisement indicated a drop in long-term memory encoding at the points where the advertisement narrative ends and the voice-over starts (24 sec) and when the child and grandfather turn and walk away from the display (26 sec). We consider both drops to be examples of Conceptual Closure as they occurred at event boundaries in the advertisement. The likely impact of Conceptual Closure on the effectiveness of the advertisement is indicated by the level of long-term memory encoding during the final 2.5 seconds. The brand is only featured in the last 2.5 sec of the original advertisement (final branding) and during this period, long-term memory encoding is low and in the lowest 8% of our database of financial services advertisements.

The revised advertisement drew heavily on the findings in the original advertisement. The main changes were aimed at reducing the impact of Conceptual Closure on branding. These included introducing the brand verbally and visually earlier and in a manner that was integrated into the storyline and suggested a continuation of the original narrative. Furthermore, the second event boundary comprising the scene where child and grandfather turn and walk away from the display was deleted. The impact of these changes on long-term memory encoding at the times of branding was significant. The impact of Conceptual Closure was reduced and now long-term memory encoding at final branding was in the top 28% of our database of financial services advertisements.

During the three month period that the original advertisement was aired and the following one month where the revised advertisement was being aired, the same independent market research firm conducted advertising tracking studies for the client. It was found that in the three month period when the original advertisement was being aired, the proportion of viewers who had seen the advertisement and correctly identified the brand (brand linkage) was consistently low. However, in the first month of the revised campaign, with approximately one-third of the original advertising budget, brand linkage more than doubled. Importantly, in the first month that the revised advertisement was aired, brand leakage was significantly lower & unprompted brand awareness had reached an all-time high – a finding that is consistent with the SST indications of improved advertising effectiveness.

CONCLUDING COMMENTS

Event boundaries can trigger a brief drop in long-term memory encoding or Conceptual Closure. While Conceptual Closure, in general may not compromise advertising effectiveness, it may do so if it immediately preceded a key message or branding. In the case study, we show how minor changes to a finished advertisement can modify the impact of Conceptual Closure and in turn significantly enhance advertising effectiveness.

ENDNOTE

1. See <http://www.thinkbox.tv/server/show/nav.1829>

REFERENCES

- Kennedy R., Northover H., Leighton, J., Bird G and Lion S. (2010) Pre-test advertising – proposing a new validity project. *Proceedings of 39th European Marketing Academy Conference (EMAC)* June 1-4, 2010 Copenhagen.
- Pynta, P., Seixas, S. A., Nield, G. E., Hier, J., & Millward, E. (2014). The power of social television: can social media build viewer engagement? A new approach to brain imaging of viewer immersion. *Journal of Advertising Research*, 54(1), 71-80.
- Shapiro, K. L., Raymond, J. E., & Arnell, K. M. (1997). The attentional blink. *Trends in cognitive sciences*, 1(8), 291-296.
- Silberstein, R. B., & Nield, G. E. (2008). Brain activity correlates of consumer brand choice shift associated with television advertising. *International Journal of Advertising*, 27(3), 359-380.
- Silberstein, R.B., Nield, G.E., Seixas, S. (2014) Long-term memory encoding of event boundaries, or why going through doorways makes you forget. *Proceedings. 4th Annual Interdisciplinary Symposium on Decision Neuroscience*. Stanford CA. 14.
- Zacks, J. M., & Tversky, B. (2001). Event structure in perception and conception. *Psychological bulletin*, 127(1), 3.

THE AUTHORS

Richard Silberstein is Professor Emeritus at Swinburne University of Technology and Chairman of Neuro-Insight Pty Ltd. Australia

Geoffrey Nield is Chief Technology Officer and Chief Operations Officer, Neuro-Insight Pty Ltd, Australia.

Peter Pynta is Director, Sales and Marketing, Neuro-Insight Pty Ltd, Australia.

Shaun Seixas is Senior Analyst, Neuro-Insight Pty Ltd, Australia.